APPROACHES TO SCABIES IN DOGS

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Ben Blacklock presents the risk factors, clinical features, diagnosis and management options for this highly contagious skin condition

SCABIES or sarcoptic mange, from the Latin scabere, meaning to scratch, accounts for around one per cent of skin conditions presented in first opinion practice, according to a study, which found that out of 559 dogs presented with dermatological problems, six had scabies[1].

Aetiology and pathogenesis

Scabies is a transmissible infestation of the skin caused by the mite *Sarcoptes scabiei* var *canis* – small (200µm to 400µm), white, oval shaped, and a member of the *Sarcoptidae* family (Figure 1). After copulation on the skin's surface, the fertilised female burrows through the skin at a rate of 2mm to 3mm a day, laying eggs (Figure 2) in the tunnel behind it. The larvae hatch and burrow to the surface of the skin where they feed. The mites' life cycle can be as short as 21 days. The associated pruritus is thought to be due to a complex hypersensitivity to various mite antigens, such as proteins in the cuticle and faeces. In humans, the hypersensitivity is thought to involve both a humoral and cell-mediated hypersensitivity and circulating immune complexes[2].

Causative agent and risk factors

Scabies mites have a host preference, but can cause disease in other species. *Sarcoptes scabiei* var *canis*, while predominantly a canine and fox parasite, can (usually transiently) infest humans

and cats. Similarly, scabies mites that have a preference for humans may infect dogs.

Dogs presenting with scabies usually have a history of being in an animal shelter, having contact with stray dogs or visiting a groomer/kennels. It is worth bearing in mind, however, that under ideal conditions female mites and nymphs can survive in the environment for four to 21 days, so animals may not present with an obvious history of exposure[3].

Clinical features

Canine scabies presents as an intense, non-seasonal pruritus. Preference sites are relatively hairless, typically the ears and elbows, but also the hocks and abdomen (Figure 3). As the disease spreads, resultant alopecia allows colonisation of large areas of the body. However, the dorsum of the trunk is usually unaffected. Figure 4 shows widespread lesions, with even dorsal midline involvement.

Lesions can include papules, alopecia, erythema, crusts and excoriations. Heavy infestations can lead to weight loss, severe crusting and scaling. Peripheral lymphadenomegaly is occasionally seen[3].

Exact incubation periods are unknown, but pruritus tends to begin a few days after infection, with an intense pruritus developing by day 21 to 30.

Atypical presentations (pruritus without severe lesions) may occur, but they are rare. “Norwegian scabies” or “crusted scabies” is a more extreme infestation, characterised by large numbers of mites – typically affecting immunosuppressed animals.

Diagnosis

Differential diagnoses include hypersensitivities to fleas, food and environmental allergens, pyoderma, demodicosis, dermatophytosis, *malassezia* dermatitis and contact dermatitis.

Allergy test results need to be interpreted with care during or following scabies infestation, since different mite species have common faecal and cuticle antigens. A positive intradermal skin test result for house dust mites may be due to a concurrent scabies infestation, and once the scabies is eradicated the antibodies to house dust mites will disappear. It is unknown how long these cross-reactive antibodies may persist for.

Diagnostic clues can be gleaned from the history and clinical examination. A positive response to scabicidal treatment adds to the index of suspicion.

A pinnal-pedal reflex is described. The edge of the pinna is rubbed between the fingers and a hindlimb scratch reflex may be elicited. This reflex is suggestive of, but not pathognomonic for,

infestation.

Superficial skin scrapes are diagnostic if the mites, ova or faecal pellets are seen. False negatives are common because mites are difficult to find. A lot of skin scrapings are required to maximise the chance of diagnosis – large amounts of material should be collected and spread on to slides with mineral oil. Ear margins, elbows and hocks are prime locations for skin scrapes.

Serology (ELISA) is widely available to aid in diagnosis. Serum IgG antibodies against sarcoptes antigens are measured. The ELISA has been reported as having a sensitivity of 84.2 per cent and a specificity of 89.5 per cent[4], although these figures vary between papers. Dogs seroconvert three to five weeks after infestation, or one to three weeks after onset of clinical signs, so sampling too early may lead to false negatives.

Similarly, young animals or those receiving corticosteroids may have a higher false-negative rate. False-positive serology can occur if a previously infested animal is tested after successful treatment, as the antibodies persist for several months.

Dermatohistopathology is usually inconclusive. Mites are rarely seen in the specimen, although suggestive features such as epidermal hyperplasia and oedema, exocytosis, degeneration and necrosis, along with increased numbers of lymphocytes, mast cells and eosinophils may be seen.

Clinical management

Many reported treatment options exist for canine scabies, but only three are licensed in the UK.

A spot-on imidocloprid/ moxidectin combination is licensed for scabies therapy. The treatment regime is a single dose given twice, four weeks apart. The spot-on can be given from seven weeks of age to dogs weighing more than one kilogram. Care should be taken to avoid oral administration (for example, by dogs grooming themselves or each other immediately after application), especially in ivermectin-sensitive collies. Moxidectin is also highly toxic to aquatic organisms, so dogs should not be allowed to swim for four days after treatment.

Another spot-on, containing selamectin, is available. The regime is also two single doses, repeated a month apart. Selamectin should not be used in animals under six weeks old.

The third option is weekly baths with amitraz. The amitraz is diluted 1:200 with water, and treatment continued for two to six weeks. Clipping and shampooing before treatment can help with application. The solution is allowed to dry on the dog. Amitraz cannot be used on Chihuahuas, pregnant or lactating bitches or puppies under three months old. The active component can cause a transient hyperglycaemia, so extra care is required if the patient or owners are diabetic. The dog should be bathed in a well-ventilated area and care should be taken to ensure no watercourses are polluted, as it is toxic to aquatic life.

In cases of severe pruritus, corticosteroids can be administered for the first two to five days of treatment (0.5-1.0mg/ kg PO q24hrs). Secondary pyoderma should be treated with an appropriate course of antibiotics.

In a kennel or multi-pet household, bedding should be disposed of and the environment thoroughly cleaned and treated with parasiticidal sprays.

Pregnant and lactating bitches and young pups with scabies present a problem as no licensed treatments are available. In the face of an outbreak, 0.25 per cent fipronil spray has been reported to be useful when applied at 3ml/kg on three occasions, at three weekly intervals[5].

Following diagnosis and appropriate treatment, the prognosis is good.

References

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